FINAL
NAVAL AIR STATION ALAMEDA RESTORATION ADVISORY BOARD
MEETING SUMMARY

http://www.efdsw.navfac.navy.mil/environmental/AlamedaPoint.htm

Building 1, Suite 140, Community Conference Center
Alameda Point
Alameda, California

January 6, 2004

The following participants attended the meeting:

Co-Chairs:	
Gregory Lorton	Naval Facilities Engineering Command, Southwest Division (SWDIV) Lead Remedial Project Manager (RPM), *on behalf of* Thomas Macchiarella Community Co-chair, SWDIV, Base Realignment and Closure (BRAC) Environmental Coordinator (BEC)
Jean Sweeney	Restoration Advisory Board (RAB) Community Co-chair
Attendees:	
Jim Barse	
Susan Boyle	United States Coast Guard (USCG)
Neil Coe	RAB
Anna-Marie Cook	U.S. Environmental Protection Agency (EPA)
David Cooper	EPA
Tracy Craig	Tetra Tech EM Inc. (Tetra Tech)
Douglas DeHaan	RAB
Judy Huang	Regional Water Quality Control Board (RWQCB)
George Humphreys	RAB
Rezsin Jaulus-Gonzalez	Alameda Point Collaborative (APC)
Elizabeth Johnson	City of Alameda
Beth Kelly	Tetra Tech
James D. Leach	RAB
Marcia Liao	Department of Toxic Substances Control (DTSC)
Cynthia Liu	Engineering/Remediation Resources Group, Inc. (ERRG)
Lea Loizos	ARC Ecology/RAB
Bert Morgan	RAB

Darren Newton	SWDIV RPM
Lona Pearson	Tetra Tech
Kevin Reilly	RAB
Irma Garcia-Sinclair	
Neil Garcia-Sinclair	
Dale Smith	Sierra Club/RAB
Jim Sweeney	RAB Vice Co-chair
Anthony Talamantez	ERRG
Luann Tetirick	RAB
Michael John Torrey	RAB

MEETING SUMMARY

I. Approval of Minutes

Ms. Sweeney, Community Co-chair, called the meeting to order at 6:40 p.m.

Ms. Sweeney asked for comments on the December 2, 2003, RAB meeting minutes. The minutes were approved, with the following corrections:

Ms. Smith, made the following comment:

- On page 7 of 11, last paragraph, third sentence "…during heavy rains and raise the water table…" should be revised to "…during heavy rains and a rise the water table…"

Mr. Humphreys, made the following comment:

- On page 6 of 11, first paragraph, sixth line, "…however, 3,000 ppm TDS is a smaller volume of water…" should be revised to "…however, 3,000 ppm TDS protects a smaller volume of water…"

Mr. Humphreys requested that the following points on the Site 26 feasibility study (FS) presentation by Jim French of Bechtel be noted:

- On page 6 of 11, third paragraph, second sentence, the proposed groundwater monitoring events would only be conducted once a year.

- On page 8 of 11, sixth paragraph, second sentence, Mr. Humphreys had inquired about the interest rate used to calculate the cost estimate, of which Mr. French replied probably 5 percent. Mr. Humphreys reviewed the appendices of the FS and found that 7 percent would have been the correct response by Mr. French.

II. Co-Chair Announcements

Ms. Sweeney made the following announcements.

The following documents are available for review in the Repository:

- Final Work Plan Full Scale In-situ Chemical Oxidation Testing Installation Restoration Sites 9 and 16, December 22, 2003.
- Final Project Plan Addendum Dense Nonaqueous Phase Liquid (DNAPL) Removal Action at Installation Restoration Site 5, December 17, 2003.
- Final Sampling and Analysis Plan for Full-Scale Operation of Dual Vacuum Extraction at Corrective Action Area 7, December 23, 2003.
- Technical Memorandum for October 2003 Corrective Action Areas 11 and 13 Remediation Systems, December 23, 2003.

Ms. Sweeney announced that Thomas Macchiarella has an excused absence, and Mr. Lorton would be standing in for him. Mr. Lorton stated that Mr. Macchiarella might be absent from the RAB meetings for the next three months.

Mr. Lorton distributed a one-page handout of current and upcoming documents to the RAB members. Highlights of the upcoming document list were discussed by month due and are listed below.

<u>January 2004</u>
- Site 2 radiological (RAD) draft action memorandum
- Site 2 RAD draft removal action work plan
- Sites 6, 7, 8, and 16 draft remedial investigation (RI)
- Site 25 final soil feasibility study (FS)
- Site 25 draft soil proposed plan (PP)
- Site 29 final RI
- Corrective action area (CAA)-4C corrective action plan

<u>February 2004</u>
- Site 2 draft RI work plan
- Sites 14 and 15 draft final PP
- Site 25/Annex IR-02 draft final groundwater RI/FS
- Site 28 draft RI

<u>March 2004</u>
- OU-2A revised draft RI
- OU-2B revised draft RI

<u>March or April 2004</u>
- Revised draft site inspection reports for polycyclic aromatic hydrocarbons (PAH) at non-Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) parcels; EDC-3, EDC-5, PBC-1A, EDC-12, EDC-17, EDC-21, PBC-3, And FED-1A.

Ms. Smith asked when in January the Site 2 RAD document would be released so a focus group for comments could be formed. Mr. Lorton replied that the RPM for Site 2, Claudia Domingo,

would need to be consulted for that information, but that there would be sufficient time for the RAB to comment on the documents. Ms. Cook stated that there is not a time crunch for the Site 2 RAD documents and that she will request the dates be pushed out at the January 2004 Realignment and Closure (BRAC) Cleanup Team (BCT) meeting. The due dates have not been discussed between the members of the BCT. Mr. Lorton stated that the due dates for the RAD documents are listed as coming out in the next week or two. Ms. Smith stated that since Site 2 is part of what will become the wildlife refuge, the Sierra Club and Audubon Society are very concerned about the outcome of the area.

Ms. Loizos stated that there is interest among the RAB members for more information on the Navy's RAD program, if there is one. She asked if the Navy could give a presentation or an overview on the Navy's RAD program to the RAB. Mr. Lorton replied that at this time the Navy does not have a Navy-wide RAD program. However, the Navy is working on RAD issues at Hunter's Point also and wants to ensure that the approach taken at Hunter's Point and Alameda Point will be consistent. He stated that a number of historical radiological assessments (HRA) were conducted at Alameda Point in the mid 1990s. At this time, the HRAs have not been carefully reviewed by SWDIV. The Navy wants to be sure the RAD issues, if any, are completely evaluated prior to a statement being made either way, and strategies for dealing with the issues are underway. Ms. Loizos stated that the RAB would like to be informed of the RAD strategies when they are available.

III. Alameda Point Site 25/ Annex IR-02 Draft Groundwater RI/FS Presentation

Mr. Newton introduced Anthony Talamantez of ERRG to present a summary of the draft groundwater RI/FS for Alameda Point Site 25 and Alameda Annex IR-02. A handout was provided and is included as an attachment to the meeting minutes. Mr. Newton stated that the document was submitted in October 2003 and that comments are due by January 16, 2004.

Mr. Talamantez stated that the groundwater RI/FS combines two sites that were previously studied under separate programs, Alameda Point Site 25 and Alameda Annex IR-02. Information for both sites has been included in one document, which is designed to address groundwater contamination across the sites as one contiguous area and to evaluate different remediation technologies. The key physical feature of Alameda Point Site 25 is residential housing, and the key feature of Alameda Annex IR-02 is its previous use as a scrap yard that stored used equipment prior to disposal; it currently is an empty parking lot. Alameda Annex IR-02 is located east of Alameda Point Site 25 and north of the warehouses that are located north of the Catellus residential housing development.

Soil data have been reviewed in the RI/FS as a cross reference only. Contaminants of concern in the groundwater are dissolved benzene (a carcinogen) and naphthalene, which are collocated in a contamination plume. The contamination plume is located in the shallowest aquifer also known as the first water bearing zone (FWBZ). The FWBZ is located between 10 to 20 feet below the ground surface (bgs). Bay Mud separates the FWBZ from the deeper aquifers. The majority of the contaminant plume especially benzene is located in the lower portion of the FWBZ at about 20 feet bgs, which is an important feature that drives the proposed remediation technologies.

A community member inquired if the FWBZ contained fresh or saline water. Mr. Talamantez replied that the groundwater has a high salt content and that beneficial reuse of the groundwater could be argued. The community member asked if the plume is tidally influenced.

Mr. Talamantez replied that the plume is far enough from the shoreline that it generally is not tidally influenced, but some movement could occur. Fresh water influx from leaking water pipes also could affect the groundwater movement.

Mr. Talamantez stated that the contamination probably came from a point source discharge, such as a spill or multiple spills, since there are very distinct plume centers as opposed to contaminants trapped when fill was placed.

Ms. Sweeney asked why the plume has not already dissipated. Mr. Talamantez replied that data have been collected since 1994 and over the last 10 years the plume has dissipated substantially. However, there are organic materials around 20 feet bgs that are hindering the contaminant degradation process. In the shallow areas around 10 feet bgs there is an aerobic environment with more biodegradation occurring. As a result, the shallow areas around 10 feet bgs have a smaller contamination plume footprint than the deeper areas at 20 feet bgs. Biodegradation is still occurring at deeper depths but when oxygen is depleted the environment turns anaerobic and biodegradation slows down or stops.

Mr. Talamantez stated that previous soil and groundwater investigations have provided sufficient data for site characterization. The nature and extent of the contamination has been determined to be benzene and naphthalene between 10 to 20 feet bgs. No contamination has been detected in deeper groundwater. No volatilized benzene has been detected in soil or soil gas above groundwater. According to the data accumulated since 1994, the plumes are not migrating or advancing laterally towards the Bay or traveling along utility lines. Microbes are present and biodegradation is occurring naturally at the site and will continue until only the plume centers are left.

Mr. Talamantez stated that the remedial action objective of the FS is to prevent exposure to contaminants in the groundwater. The main exposure route would be shallow well groundwater pumping followed by human ingestion of the groundwater. Cleanup levels presented in the report for the contaminants of concern are the State's maximum contaminant level (MCL) for benzene since it is the more stringent than the federal MCL; for naphthalene the EPA's health advisory was used since a MCL is not established.

Mr. Talamantez stated that Figure 4-2 of the handout, which also is included in the report, depicts computer-generated contours of the benzene plume using 1999 monitoring well data, as opposed to more accurate and recent Hydropunch™ data. A monitoring well is a vertical tube screened across multiple depths. A Hydropunch™ is a probe that is pushed to a discreet location at one depth, which makes it much more accurate. Ms. Smith asked at what depth the monitoring wells are screened. Mr. Talamantez replied that the monitoring wells on the map are screened over varying intervals but generally are screened across the entire aquifer. Ms. Cook recommended that people look at the report and review the Hydropunch™ data for a more accurate view of the plumes at specific depths. She also stated that the Hydropunch™ data are from 2001 and are therefore more recent.

Ms. Smith asked why the plume contours illustrated on the figure are irregular in shape. Ms. Cook replied that the irregular shapes are a result of using a computer to generate the contours, the computer attempts to wrap the contours, which gives them an unrealistic appearance. Mr. Talamantez stated that the figure basically shows where the concentrated plume centers are located and that the monitoring wells located at the edges of the plume indicate the

occurrence of biodegradation.

Mr. DeHaan asked if the source of the contamination is the same for all three plumes, or do they have different sources. Mr. Talamantez replied that he is estimating that there are multiple sources merging together. Historical aerial photographs, included within the report, show potential ground staining near the plume centers that may be the original point sources.
Mr. DeHann asked what types of sources are suspected to have caused the plume.
Mr. Talamantez replied that the point source could be spills, including gasoline or diesel spills. He stated that contamination also could have been present at the time when the area was filled, as with the Marsh Crust, but this is very unlikely.

Mr. Lorton noted that historically benzene was a by-product produced by the oil-gasification and manufactured gas plants. Because both benzene and naphthalene are present, the contamination could possibly originate from the Marsh Crust. However, the three different plumes would suggest that it is not from the marsh crust layer.

Ms. Sweeney asked if modern gasoline additives have been detected in the analytical results.
Mr. Talamantez replied that very low detections of methyl tert butyl ether (MTBE) have been detected. Ms. Loizos stated that even low detections of MTBE would indicate that the point source would be relatively recent. Mr. Talamantez replied that is correct since MTBE is not found in nature.

Mr. Humphreys asked if there is a way to fingerprint the benzene or naphthalene plumes by analyzing the relative concentrations of specific components to determine whether their origin is diesel or gasoline. Mr. Talamantez stated that it has not been done in this study. Mr. Lorton stated that it was done at Site 13 to determine the origination of the tarry waste, which was Monterey crude.

Mr. DeHaan asked if there are any indications of lead in the area, since lead could negate some of the theory of the manufactured gas plants. Mr. Talamantez replied he would have to review the data again and that he did not recall a lead pattern. However, PAH were reviewed in general to determine if the PAHs were leaching from the Marsh Crust. If they were, a complete suite of PAHs would be detected in the groundwater. Naphthalene was detected at much higher concentrations than the other PAHs.

Ms. Sweeney asked if a study has been conducted in the warehouse area since the warehouses have been removed. Mr. Talamantez replied that he is not involved in a study for this area but someone else might be. Mr. Lorton stated that he believes the area has been thoroughly characterized but he would have to contact Lou Ocampo the Alameda Annex project manager to be sure.

Ms. Huang stated that Catellus observed petroleum stained soil in the warehouse area and conducted a removal action, but that she has not yet received the report. Mr. DeHaan asked if monitoring wells would be installed. Ms. Huang replied that RWQCB staff requested a report from Catellus; however, until a report is received she does not have any further information.

Mr. Humphreys commented that the warehouse area has very unstable ground. Prior to removal of the buildings, it was evident that the ground had settled several feet away from the foundations. Previously, it was reported by Patrick Lynch that the area also is seismically

unstable. If the ground is poorly compacted and unstable, then it could provide a conduit or pathway for the groundwater to permeate, percolate, or migrate through soil. Mr. Humphreys stated that a few months back the City petitioned to remove the warehouses as a Resource Conservation and Recovery Act (RCRA) permitted area. At that time he was concerned that a groundwater plume or soil contamination could be present, but the Navy stated that there was not. Mr. Talamantez asked if Mr. Humphreys is concerned that the plume has migrated south. Mr. Humphreys replied that there could be a continuation of the plume into the warehouse area.

Ms. Huang stated that the Alameda Annex RAB meeting is being held tomorrow January 7, 2004. Issues that overlap Alameda Point will be discussed, including this presentation, and anyone interested should attend. Ms. Huang stated that she also participates on the Alameda Annex RAB as a BCT member.

Ms. Loizos commented that when issues affect both Alameda Point and Alameda Annex combining the meetings should be considered. Mr. Lorton stated that the sites that are the topic of this presentation are being addressed as one site, they just happen to overlap two different installations. Issues that are strictly Alameda Annex issues should not be discussed at this meeting.

Ms. Smith noted that within the historical extent of Alameda Point this area was marshy and contained many sloughs. This previous marsh environment and groundwater condition could be affecting contamination migration. Ms. Smith requested that a historical extent of Alameda Point map be overlaid on the plume map to determine if the previous conditions affect the plume. Mr. Talamantez replied that the maps could be overlaid and that the previous hydrological conditions might explain some of the patterns within the plume.

Mr. DeHaan asked why the warehouses are not included on the maps since the two sites are combined. Mr. Lorton replied that he does not believe there are issues with the warehouses. Benzene in the groundwater is the issue at this combined site.

Ms. Cook commented that an Alameda Annex groundwater document from the early 1990s could be helpful in proving that the warehouse area has been previously reviewed. The document provided contours for benzene from data collected over a fairly extensive monitoring well network that included the warehouse area. Since there were monitoring wells located in the warehouse area the information can help prove that the area has been looked at even if the analytical results are non-detects. Mr. Talamantez stated that he is familiar with the document and that the information was used in this RI/FS. The document was produced by Tetra Tech and modeled groundwater for Alameda Annex. Ms. Cook stated that at the time that the Alameda Annex document was produced Alameda Point was not on the groundwater program and the benzene plume ended at the fence line. Later when Alameda Point began groundwater monitoring, the plume could be defined by combining the data from both Alameda Point and Alameda Annex.

Mr. Talamantez stated that from 1994 through 1996 the monitoring well network was quite extensive on the Alameda Annex side; however, now most of the wells have been destroyed or paved over and that there is a different well network now. Mr. Talamantez stated that all well information is included in the RI/FS, is also stored in the database, and there is also a figure that has snapshots of the monitoring well network from 1996 through 1999 in the RI/FS.

Ms. Jaulus-Gonzalez requested that since Alameda Point Collaborative (APC) will have residential housing within most of the contaminated areas that gardening be considered when conducting the human health risk assessments. Mr. Talamantez replied that gardening has been considered at a root zone depth of less than 10 feet. Ms. Cook stated that ingestion of groundwater including gardening was considered and the cleanup goals are set at the most conservative level.

Ms. Liu, an ERRG toxicologist, also stated that the pathway for ingestion of groundwater by root uptake from gardening was thoroughly addressed, including fruit trees and root crops and that other exposure pathways from groundwater use, including industrial applications and car washing, also were evaluated.

Mr. Talamantez stated that 15 technologies were screened to resolve the problems associated with the site. The basic criteria used in the screening were effectiveness, cost, and implementability. Of the 15 technologies, 5 were considered as remedial alternatives. The following three remedial alternatives were included in the RI/FS: (1) no action, (2) monitored natural attenuation (MNA) with institutional controls (IC), and (3) biosparging with MNA and IC. Remedial alternatives 2 and 3 are comparable in price; however, Alternative 3 at 9 years would take less than half the required time for Alternative 2 at 20 + years.

Mr. Talamantez stated that biosparging is low-pressure injection of air into a well, similar to a monitoring well, to promote biodegradation by supplying oxygen.

Mr. Talamantez stated that Table 9-4 of the handout illustrates the three alternatives as ranked using seven criteria from the National Contingency Plan (NCP) guidance. The highest ranked (which is the best-case scenario) is Alternative 3. Alternative 3 had a higher ranking than Alternative 2 because the groundwater could be remediated in half the time as Alternative 2 for about the same cost. Mr. Reilly asked what scale was used for the ranking. Mr. Talamantez replied that each criterion was ranked on a scale of 1 to 5 with 5 being the most desirable. This method of comparing each alternative is highly objective.

Mr. Talamantez stated that the sites are currently in the RI/FS stage of the CERCLA process. The actual preferred option will be selected in the Proposed Plan and Record of Decision (ROD) stage. Alternative 3 appears to be the preferred option, but community acceptance also has to be considered.

Mr. DeHaan asked what type of construction or redevelopment can be conducted during the 9 years of biosparging. Mr. Talamantez replied that biosparging would be conducted for 2 years in the plume centers and MNA would be conducted for 7 years. During the 2 years of biosparging there would be underground pipes, but for the remaining 7 years there could be development.

Ms. Smith asked how peripheral portions of the plume would be remediated, if only the plume centers are to be treated. Mr. Talamantez replied that biodegradation would continue and the plume's outer edges are breaking down. Data over time for the plume centers have been flat and unchanged. Ms. Loizos commented that it is hard to believe that the plume has been stagnant for 10 years and that there is not a continuing source. Ms. Loizos asked if the Navy is confident that there is no longer a source or sources. Ms. Huang replied that she had commented on the RI/FS regarding if there was a petroleum source and where it was located, since she had not found the

petroleum source during her previous review of all the petroleum tanks. Ms. Huang also stated that without oxygen benzene would not breakdown, and it is possible that the benzene has been there for 10 years. However, the trace amounts of MTBE detected in the plume indicate that the source is fairly young. Mr. Lorton agreed that the MTBE would make the plume 20 years old or less.

Ms. Cook commented that a 1968 aerial photograph showed a soil stain at Kollman Circle, one of the plume centers; however, MTBE was not used at that time.

Mr. Talamantez stated that the point source theory is frustrating because there is not an underground storage tank defining the point source. Soil sampling and Hydropunch™ sampling have created a Swiss cheese effect, and there has not been much correlation between soil contamination and groundwater contamination.

Mr. DeHaan stated that historically the Navy had a smeltering plant near the plume area in Alameda Annex IR-02 where the Navy took old aircraft, parts, and scrap. Using aviation fuel, the Navy would melt down the parts. Mr. Talamantez stated that he would be interested in speaking with Mr. DeHaan about the alleged smeltering plant after the meeting.

Mr. Coe stated that today's *Alameda Journal* ran an interesting historical article on the original oil refinery at Alameda Point. The article provides extensive descriptions on the activities of the oil refinery, which is described as a forerunner of Chevron Oil. The article states that gasoline and other products that are used today were waste products that needed disposal.

Mr. Humphreys asked what was the outcome of the focus group meeting on the report with the Technical Assistance for Public Participation (TAPP) Grant contractor, and if the comments have been submitted. Ms. Loizos replied that she was waiting on feedback from the RAB and that she has not yet reworked the comments, which are due on January 16, 2004.

IV. BRAC Cleanup Team (BCT) Activities

Ms. Cook stated that the main topic of the BCT meeting was the upcoming work plan for the Site 2 RI. Because the previous RI for Site 2 was insufficient, the EPA proposed holding a scoping meeting in early January to ensure that data quality objectives (DQO) were developed and then met. Ms. Cook requested that interested RAB members be involved and submit their comments, suggestions, or ideas to the Navy or regulators by e-mail or letter in order to ensure a quality document.

Ms. Huang agreed that Site 2 participation by everyone is a top priority. The site currently consists of wetlands on top of a landfill and is destined to be a wildlife refuge.

Ms. Huang stated that on December 10, 2003 the regulators met with the Navy to discuss the response to comments for Site 29, the skeet range. Site 29 is the offshore parcel adjacent to the Site 1 landfill. It was agreed and placed in the record that the beach adjacent to Site 1 will be addressed in the revised Site 1 RI instead of addressing it with Site 29.

Ms. Cook stated that at the last RAB meeting she discussed some issues that were occurring with some of the residents at the Bessie Coleman Center. As a result of the issues a meeting was held on December 17, 2003 with the residents, the Navy, representatives of the APC, the regulatory

agencies, and a physician by request of the Navy. Ms. Cook requested that Ms. Jaulus-Gonzalez continue with the outcome of the meeting. Ms. Jaulus-Gonzalez stated that there were about 13 people at the meeting, and that the people who were complaining about health problems had pre-existing conditions. There is no further need for the Navy or regulators to continue to follow up on the matter. The issue now is being addressed internally between the APC, property managers, and the residents. Ms. Jaulus-Gonzalez requested if an issue like this ever happens to come up again that she or another member of the APC management staff be notified as soon as possible and be provided with updated information on a timely basis. Ms. Jaulus-Gonzalez thanked everyone that was involved for helping out on the issue.

V. Community and RAB Comment Period

Mr. Humphreys provided a handout that he prepared regarding the December 2, 2003 RAB presentation of the Site 26 FS, which compares the cost estimates of Alternatives 2 and 3. Mr. Humphreys had raised two questions in the previous meeting (1) what rate was used in computing the present value, which he determined to be 7 percent, and (2) how many groundwater monitoring events would be conducted, which he determined to be once annually. Mr. Humphreys recalculated the costs using the above values and compared the two alternatives. In summary, Mr. Humphreys determined that by changing either of the two assumptions used in the original cost comparison, Alternative 2 was more costly than Alternative 3 and Alternative 3 could be conducted in a reasonable amount of time (3 years compared to 70 + years). Mr. Humphreys' complete cost analysis comparison for Alternatives 2 and 3 is included as part of Attachment B.

Mr. Coe made a motion to change the RAB meeting date from the first Tuesday of each month to the second Tuesday of each month to allow city council members a chance to attend the RAB meetings. The motion was then discussed, Mr. Humphreys seconded the motion, and the date change was approved by vote. The motion will take effect immediately. February's RAB meeting is now scheduled for February 10, 2004.

The meeting was adjourned at 8:35 p.m.

ATTACHMENT A

NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING AGENDA
January 6, 2004

(One Page)

RESTORATION ADVISORY BOARD

NAVAL AIR STATION, ALAMEDA

AGENDA

JANUARY 6, 2003 6:30 PM

ALAMEDA POINT – BUILDING 1 – SUITE 140
COMMUNITY CONFERENCE ROOM
(FROM PARKING LOT ON W MIDWAY AVE, ENTER THROUGH MIDDLE WING)

TIME	SUBJECT	PRESENTER
6:30 - 6:40	Approval of Minutes	Jean Sweeney
6:40 - 6:55	Co-Chair Announcements	Co-Chairs
6:55 – 7:00	Upcoming and current Documents available for review	Thomas Macchiarella
7:00 - 7:35	Site 25 and Alameda Annex IR Site 02 Draft Groundwater RI/FS Presentation	Navy and ERRG
7:35 – 7:40	BCT Activities	Anna Marie Cook
7:40 – 8:00	Community & RAB Comment Period	Community & RAB
8:00	RAB Meeting Adjournment	

ATTACHMENT B

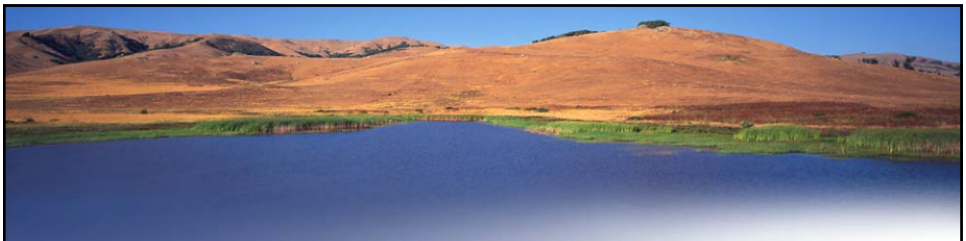
NAVAL AIR STATION ALAMEDA
RESTORATION ADVISORY BOARD MEETING HANDOUT MATERIALS

Draft Groundwater RI/FS – October 2003 Alameda Point Site 25 / Annex IR-02, Presented by Anthony Talamantez, ERRG. January 6, 2004. (9 pages)

Cost Comparison of Alternatives 2 and 3 from Bechtel's IR Site 26 FS Presentation at the December 2003 RAB Meeting, Prepared by RAB Member George Humphreys. January 6, 2004. (6 pages)

Alameda Point Site 25 / Annex IR-02 Draft Groundwater Presentation

(9 pages)



Alameda NAS RAB Presentation
January 6, 2004

Draft Groundwater RI/FS – Oct 2003
Alameda Point Site 25 / Annex IR-02

ERRG

Engineering/Remediation Resources Group, Inc.

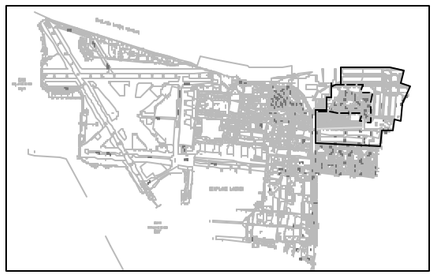
Presentation Outline

- Basis for RI/FS
- Physical Characteristics of the Site
- Previous Investigations
- Nature and Extent of Contamination
- Fate and Transport
- Groundwater Remedial Action Objective
- Human Health Risk Assessment
- General Screening of Remedial Technologies/Processes
- Evaluation of Remedial Alternatives
- Current Status of Project

ERRG

LEGEND

- ALAMEDA POINT (OU-5) BOUNDARY
- ALAMEDA POINT/ANNEX INVESTIGATION AREA BOUNDRY
- ALAMEDA POINT RESIDENTIAL PARCELS



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ERRG
Engineering/Remediation Resources Group, Inc.
4070 Nelson Ave., Suite B
Concord, California 94520
(925) 969-0750

INVESTIGATION AREA
GROUNDWATER RI / FS
ALAMEDA POINT / ANNEX

Client: NAVY SWDIV

DWG. NO. 22-052-FIGURE 1-2

FIGURE: 1-2

XREF: Ala1base_orig
FILE: i:\Projects\2002 Projects\22-052 RI FS Alameda Point\Figures\Draft version\B Oct 03\22-052 FIG 1-2.dwg USER: rwong Oct 06, 2003 5:09pm

Basis for the RI/FS

- Previous investigations evaluated groundwater contamination as two separate sites
- Contaminants detected: dissolved benzene and naphthalene
- Location: shallowest water bearing zone (10-20' deep)
- A comprehensive RI/FS was needed to address the site as one contiguous area

ERRG

RI/FS Components

Physical Characteristics of the Site

- Shallow groundwater (~10' deep)
- Flat; mostly paved; residential housing

Previous Investigations

- Ample characterization
- RI's for Alameda Point OU-5 and Alameda Annex
- FS for Marsh Crust and Annex

ERRG

RI/FS Components (cont.)

Nature and Extent of Groundwater Contamination

- Dissolved benzene/naphthalene in shallow groundwater (10-20' deep)
- Not detected in deeper groundwater
- Volatilized benzene not found above groundwater

Contaminant Fate and Transport

- Natural biodegradation active at site
- Natural biodegradation will continue until only plume centers (3) are left
- Not migrating laterally or vertically
- Not traveling along utility lines

ERRG

Groundwater Remedial Action Objective

"Prevent Exposure to Contaminants in Groundwater"

- Contaminants of Concern: benzene and naphthalene
- Exposure Route/Receptor: shallow well pumping followed by human ingestion
- Cleanup levels: State MCL for benzene (most restrictive); USEPA Health Advisory for naphthalene (no MCL established)

ERRG

P181-03 ● 0.5
P181-06 ● 0.5
P181-10 ● 0.5
P181-09 ● 0.5
P181-14 ● 0.5
P181-01 ● 0.5
P181-MW45 ● 80.7
P181-MW46 ● 14
P181-MW47 ● 251
S-35 ● 0.5
S-14 ● 0.5
MW-2 ● 0.5
S-02 ● 0.5
S-11 ● 0.5
MW-6 ● 0.5
S-12 ● 0.5
PW-10A ● 0.8
PW-12 ● 3.1
MW-5 ● 91
S-25 ● 121
S-05 ● 0.5
S-10 ● 0.5
S-04 ● 0.5
S-15 ● 0.5
S-23 ● 176
71
EW-3
EW-2 ● 730
15
MW-11
S-03 ● 21
S-13 ● 0.5
S-06 ● 3.3
● 1.5
S-19 ● 0.5
MW-7
S-33 ● 0.5
S-28 ● 31
S-17 ● 0.5
S-21 ● 1.5
S-32 ● 0.6
S-16 ● 2.4
S-18 ● 0.5

Concentrations (ug/L)
1600
1500
1000
500
400
300
200
100
50
0

NOTE:
1. CONTOURS GENERATED BY SURFER

SCALE
0 250 500

1999 BENZENE CONTOUR MAP SHALLOW MONITORING WELL DATA

ERRG
Engineering/Remediation Resources Group, Inc.
4070 Nelson Ave., Suite B
Concord, California 94520
(925) 969-0750

Client: NAVY SWDIV

DWG. NO. 22-052-FIGURE 4-2

FIGURE: 4-2

XREF: Fig5-2_MW_1999 11x17
FILE: i:\Projects\2002 Projects\22-052 RI FS Alameda Point\Figures\Draft version\4 Sep 03\22-052-figure 5-2.dwg USER: rwong Sep 30, 2003 4:06pm

RI/FS Components (cont)

Human Health Risk Assessment

- No unacceptable risks to humans as long as groundwater is not used as potable water

General Screening of Remedial Technologies/Processes

- 15 technologies/processes evaluated
- Criteria used: Effectiveness, Cost, Implementability
- 5 technologies/process retained to create remedial alternatives

Evaluation of Remedial Alternatives

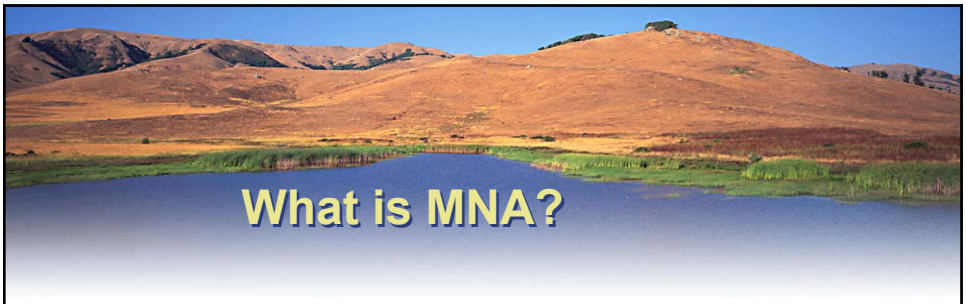
- No Action
- MNA with Institutional Controls (no use of shallow aquifer)
- Biosparging with MNA and Institutional Controls

ERRG

Remedial Alternatives
Cost and Cleanup Timeframes (Estimated)

No Action	$0	0 years
MNA/Inst Controls	$1,164,467	20+ years
Biosparging with MNA/Inst Controls	$959,086	9 years

ERRG



What is MNA?

- Use of already occurring natural biodegradation processes to breakdown contamination
- Includes careful tracking of site contamination and biodegradation processes
- Requires a full-coverage monitoring network
- Can be used for "low-risk" sites where contaminant sources have been removed

ERRG

What is Biosparging?

- Low-pressure injection of air into the subsurface (groundwater) using vertical sparge wells (similar to g.w. monitoring wells)
- Accelerates already occurring natural biodegradation process by supplying more oxygen
- Biosparging minimizes volatilization of benzene while air sparging injects higher air pressures and maximizes volatilization
- Biosparging does not typically require vapor collection and treatment (air sparging does)

ERRG

Table 9-4

Remedial Alternative Evaluation Table

Alameda Point Site 25/Annex IR-02 Groundwater RI/FS

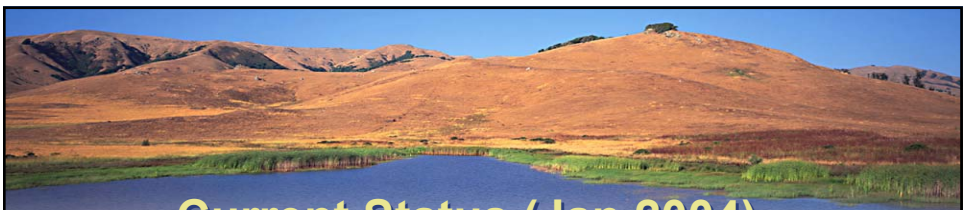
NCP Criteria	Alternative 1 Ranking No Action	Alternative 2 Ranking MNA with Institutional Controls	Alternative 3 Ranking Biosparging with MNA/Institutional Controls
Overall Protection of Human Health and the Environment	1	2	5
Compliance with ARARs	4	4	5
Long-term Effectiveness and Permanence	1	2	4
Reduction of Toxicity, Mobility, or Volume through Treatment	2	2	3
Short-term Effectiveness	1	3	4
Implementability	5	4	3
Cost	5	3	4
Average Ranking	**19**	**20**	**28**

Ranking Scale: See Table 9-1

Benefits of Biosparging with MNA?

- MNA will address most of the contamination, but may not remediate plume centers, where concentrations are highest
- Biosparging accelerates biodegradation and ensures that plume centers are remediated
- The biosparging cleanup timeframe is much shorter than for MNA (estimated 9 years versus 20+ years)
- Biosparging minimizes volatilization of benzene, ensuring protection of residents
- Cost for Biosparging is approx equal to 20 years of MNA
- Low disturbance to site (more than m.w.'s but less than other invasive technologies)

ERRG



Current Status (Jan 2004)

- Draft has been submitted and regulatory agency comments are being received and addressed
- New monitoring well data has been generated and will be incorporated into the document
- Comment period extended to January 16, 2004
- BCT and RAB input is being solicited
- The document will be revised accordingly

ERRG

IR Site 26 FS Cost Comparison Alternatives 2 and 3

(6 pages)

IR SITE 26 FEASIBILITY STUDY

1/6/04 (1)

PREPARED BY:
GEORGE HUMPHREYS

COMPARISON OF ALTERNATIVES 2 & 3

ALTERNATIVE 2: COST ESTIMATE

MONITORED NATURAL ATTENUATION WITH LAND USE CONTROLS.

FROM TABLE 6-1 OF REPORT
ASSUMES ONCE A YEAR SAMPLING
7% INTEREST, 6 MONITORING WELLS
30 YEARS OPERATION

DESCRIPTION	COST
CAPITAL COSTS	
GROUNDWATER MONITORING WELLS	$ 36,000
PROFESSIONAL LABOR (INCL. MONITORING PLAN)	80,000
TOTAL CAPITAL COST (JAN '02 $)	$ 116,000
O&M COSTS	
GROUNDWATER MONITORING (SAMPLING, ANALYSIS, MONITORING PERSONNEL, INCL. 5 YR REVIEWS)	3,934,000
TOTAL O&M COSTS	$ 3,934,000
CONTINGENCY (20%)	810,000
ESCALATION (3%/YEAR)	11,559,000
TOTAL COST	$ 16,419,000
NET PRESENT VALUE (@ 7% INTEREST)	1,778,000

IR SITE 26 FEASIBILITY STUDY

1/6/04 (2)

ALTERNATIVE 3 : COST ESTIMATE

IN-SITU CHEMICAL OXIDATION
ENHANCED MONITORED NATURAL ATTENUATION
LAND USE CONTROLS

FROM TABLE 6-2 OF REPORT
ASSUMES 1YR CLEANUP, FOLLOWED BY 2 YR OF MONITORING
7% INTEREST, 8 MONITORING WELLS

DESCRIPTION	COST
CAPITAL COSTS	
BENCH-SCALE TEST AND PILOT TEST IN-SITU CHEMICAL OXIDATION	$ 500,000
GROUNDWATER WELLS (8)	42,000
INJECTION WELLS (14)	102,000
IN-SITU CHEM. OXIDATION	555,000
ENHANCED MNA AQUIFER AMENDMENTS	216,000
PROF. LABOR	200,000
TOTAL CAPITAL COSTS (JAN '03 $)	1,615,000
O&M COSTS	
TOTAL O&M COSTS (JAN '03 $)	508,000
	508,000
CONTINGENCY (20%)	425,000
ESCALATION (3%/YR)	96,000
TOTAL COST	2,644,000
NET PRESENT VALUE	$ 2431,000

IR SITE 26 - FEASIBILITY STUDY

1/6/04

EQUATION FOR PRESENT VALUE (P) OF SERIES OF FUTURE AMOUNTS (A) AT i% INTEREST FOR n YEARS

$$P = A \frac{(1+i)^n - 1}{i(1+i)^n}$$

FOR ALT. 2

$$A = \frac{3934{,}000}{70 \text{ YRS}} \times \underset{\text{CONTINGENCY FACTOR}}{1.20} = \$67{,}440/\text{YR}$$

$n = 70$ YEARS

$i = \underset{\text{INTEREST}}{0.07} - \underset{\text{ESC}}{0.03} = 0.04$

O&M COSTS $\quad P = 67{,}440 \times \dfrac{(1.04)^{70} - 1}{0.04(1.04)^{70}}$

$$P = 67{,}440 \frac{(15.5716 - 1)}{0.04(15.5716)}$$

$$P = 67{,}400 \frac{14.5716}{0.04 \cdot (15.5716)}$$

$$P = \boxed{\$1{,}576{,}790}$$

CAPITAL COSTS

$$P = 116{,}000 \times \underset{\text{CONTINGENCY}}{1.20} = \boxed{\$139{,}200}$$

CAPITAL + O&M COSTS

$$P = 1{,}576{,}790 + 139{,}200 = 1{,}715{,}490$$

SAY $\boxed{1{,}716{,}000}$

NAVY GETS 1,778,000

IR SITE 26 - FEASIBILITY STUDY

1/6/04

FOR ALT 3

$$A = \frac{508,000}{3} \times 1.20 = \$203,200/4R$$

CONTINGENCY FACTOR

O&M COSTS

$$P = 203,200 \times \frac{(1.04)^3 - 1}{0.04\,(1.04)^3}$$

$$P = 203,200 \quad \frac{1.124864 - 1}{0.04\,(1.124864)}$$

$$P = 203,200 \quad \frac{0.124864}{0.04\,(1.124864)}$$

$$P = \$563,900$$

CAPITAL COST

$$P = 1,615,000 \times 1.20 = \$1,938,000$$

CAPITAL + O&M COSTS

$$P = \$563,900 + 1,938,000 = \$2,501,900$$

NAVY GETS 2,431,000

SENSITIVITY ANALYSIS

TRY 5% INTEREST FOR P.V. CALC.

ALT 2 $i = 0.05 - 0.03 = 0.02$

INTEREST ESCAL.

O&M COSTS:

$$P = 67,440 \quad \frac{(1.02)^{70} - 1}{0.02\,(1.02)^{70}}$$

$$P = 67,440 \quad \frac{3.999558 - 1}{0.02 \times 3.999558}$$

$$P = 67,440 \times \frac{2.999558}{0.02 \times 3.999558} = \$2,528,907$$

CAPITAL COSTS (SAME) 139,200

$\$2,668,107$

IR SITE 26 - FEASIBILITY STUDY

1/6/04

SENSITIVITY ANALYSIS (CONT'D)

5% INTEREST

ALT 3

O&M COSTS

$$P = 203{,}200 \times \frac{(1.02)^3 - 1}{0.02\,(1.02)^3}$$

$$P = 203{,}200 \quad \frac{1.061208 - 1}{0.02 \times 1.061208}$$

$$P = 203{,}200 \times \frac{0.061208}{0.02 \times 1.061208} = \$586{,}005$$

CAPITAL COSTS (SAME) 1,938,000

$2,524,005

TRY TWICE A YEAR MONITORING WITH 7% INTEREST

ALT 2

O&M costs = 2 x 67,440/yr = $134,880

P = 2 x 1,576,790 = $3,153,580

CAPITAL COSTS (SAME) 139,200

$3,292,780

ALT 3

O&M COSTS = 2 x $203,200/YR = $406,400/YR

P = 2 x 563,900 = 1,127,800

CAPITAL COST (SAME) 1,938,000

$3065,800

1/6/04

SUMMARY COMPARISON

ALT 2 & ALT 3

NET PRESENT VALUES (MILLIONS)

	7% INT ONCE/YR MONITORING	5% INT ONCE/YR MONITORING	7% INT TWICE/YR MONITORING
ALT. 2 MONITORED NAT. ATTEN. W/ LAND USE CONTROLS	1.7	2.7	3.3
ALT. 3 IN-SITU CHEM. OK. MONITORED NAT. ATTENUATION LAND USE CONTROLS	2.5	2.5	3.1

CONCLUSION, EITHER CHANGING THE ASSUMED INTEREST RATE FROM 7%/YR TO 5%/YR, OR CHANGING TO TWICE A YEAR MONITORING, MAKES ALT. 2 THE MORE COSTLY ALTERNATIVE.